

What is claimed is:

1. An occlusal surface transfer instrument comprising:  
a bite material holding member for holding a non-hardened bite  
5 material in a bitable state;  
a connection member the one end of which the bite material  
holding member is disposed in;  
a pupil line setting rod connected near a center region thereof  
to other end of the connection member; and  
10 a median line setting rod attachable to the pupil line setting  
rod at right angles;  
said median line setting rod being able to be in an arbitrary  
angular position around a material axis of the pupil line setting  
rod;  
15 said pupil line setting rod being able to be attached to the  
connection member so as to be at right angles to the material  
axis of the connection member and so as to be swingable or  
rotatable around the material axis of the connection member.
2. The occlusal surface transfer instrument according  
20 to claim 1 wherein said connection member is provided with an  
insertion hole having a circular sectional shape in the other  
end, and said pupil line setting rod is provided with an inserting  
portion which protrudes near the center region of said pupil line  
setting rod and which has circular sectional shape, the inserting  
25 portion being fitted into the insertion hole.
3. The occlusal surface transfer instrument according  
to claim 2 wherein said connection member is provided with an

inserting portion fixing mechanism so that the inserting portion is fixed into the insertion hole at an arbitrary angle to an axial line of the insertion hole.

4. The occlusal surface transfer instrument according to claim 1 wherein said pupil line setting rod is formed to a circular section and said median line setting rod is provided with a fitting portion in the peripheral surface of said median line setting rod, the fitting portion being attachable to said pupil line setting rod and being constituted so that said median line setting rod can be slidable along said pupil line setting rod and can be swung or rotated around the material axis of said pupil line setting rod when said median line setting rod is attached to said pupil line setting rod.

5. The occlusal surface transfer instrument according to claim 4 wherein said fitting portion is provided with a fitting portion fixing mechanism so that said median line setting rod can be fixed at a desired position of said pupil line setting rod and in a desired angular position around a material axis of said pupil line setting rod in a state in which said fitting portion is attached to said pupil line setting rod.

6. An articulator comprising:  
a bottom plate the upper surface of which a lower-jaw dentition cast is able to be attached to;  
a support mechanism stood in the vicinity of a rear edge portion of the bottom plate; and  
a top plate the lower surface of which an upper-jaw dentition cast is able to be attached to;

said top plate being mounted at rear edge portion thereof to  
said support mechanism in a cantilever form so as to be directed  
frontwards and being mounted to said support mechanism  
detachably or rotatably such that an upper and lower sides of  
5 the said plate can be reversed;

said bottom plate and said top plate being constituted to be  
able to fix the lower-jaw dentition cast and the upper-jaw  
dentition cast to the upper surface of said bottom plate and the  
lower surface of said top plate respectively such that a median  
10 line setting rod constituting an occlusal surface transfer  
instrument according to any one of claims 1 to 5 is disposed  
perpendicularly to said bottom plate on the condition that a  
hardened bite material held by a bite material holding member  
constituting said occlusal surface transfer instrument is bitten  
15 between front teeth of the upper-jaw dentition cast and those  
of the lower-jaw dentition cast so as to correspond to an  
occlusion impression impressed on the hardened bite material and  
that two side materials are bitten between molar of the upper-jaw  
dentition cast and molar of the lower-jaw dentition cast  
20 respectively so as to correspond to occlusion impressions  
impressed by upper and lower molar on two side bite materials  
respectively;

said top plate and said support mechanism being constituted  
to be able to retain a relative positional relation between said  
25 bottom plate and said top plate before and after removing the  
bite material and two side bite materials and to be able to retain  
a relative positional relation between said bottom plate and said

top plate before and after mounting said top plate or before and after reversing said top plate.

7. The articulator according to claim 6 wherein said support mechanism comprises a pair of height adjusting rods stood  
5 at a distance each other along a rear edge portion of said bottom plate,

wherein said top plate comprises a top plate base member whose opposite end portions are provided with rod holes through which the height adjusting rods are inserted, and a top plate main body  
10 connected to the top plate base member via hinges,

whereby to elevate said top plate along the height adjusting rods and reverse upper and lower surfaces of said top plate main body,

wherein a fixing mechanism which fixes the top plate base member  
15 to desired positions of the height adjusting rods is disposed in the top plate base member or the height adjusting rod.

8. The articulator according to claim 7 wherein said bottom plate and said top plate are provided with a median line setting rod groove in front end surface thereof respectively,  
20 the median line setting rod groove being formed so that the median line setting rod constituting the occlusal surface transfer instrument can be fitted,

wherein a depth of the median line setting rod groove is set so that the median line setting rod becomes perpendicular to said  
25 bottom plate, when the median line setting rod is fitted into the median line setting rod grooves.

9. The articulator according to claim 7 wherein a front

end surface of said bottom plate or said top plate is provided with a predetermined pupil line reference line disposed in parallel with said bottom plate.

10. The articulator according to claim 8 wherein an  
5 inner surface of each median line setting rod groove is provided with a median line reference line perpendicular to said bottom plate, and the front end surfaces of said top plate and said bottom plate are provided with pupil line reference lines at right angles to the median line reference lines, respectively.

10 11. The articulator according to claim 6 wherein said bottom plate and said top plate are provided with a median line setting rod groove in front end surface thereof respectively, the median line setting rod groove being formed so that the median line setting rod constituting the occlusal surface transfer  
15 instrument can be fitted,

wherein a depth of the median line setting rod groove is set so that the median line setting rod becomes perpendicular to said bottom plate, when the median line setting rod is fitted into the median line setting rod grooves.

20 12. The articulator according to claim 6 wherein a front end surface of said bottom plate or said top plate is provided with a predetermined pupil line reference line disposed in parallel with said bottom plate.

25 13. The articulator according to claim 11 wherein an inner surface of each median line setting rod groove is provided with a median line reference line perpendicular to said bottom plate, and the front end surfaces of said top plate and said bottom

plate are provided with pupil line reference lines at right angles to the median line reference lines, respectively.

14. A method of making an artificial tooth, comprising the steps of:

- 5       biting a hardened bite material held by a bite material holding member provided with one end of a connection member constituting an occlusal surface transfer instrument between front teeth of an upper-jaw dentition cast and those of a lower-jaw dentition cast so as to correspond to an occlusion impression impressed  
10       on the hardened bite material and biting a two side materials between molar of the upper-jaw dentition cast and molar of the lower-jaw dentition cast respectively so as to correspond to occlusion impressions impressed by upper and lower molar on two side bite materials respectively;
- 15       fixing the lower-jaw dentition cast and the upper-jaw dentition cast to an upper surface of a bottom plate and a lower surface of a top plate respectively, the bottom plate and the top plate constituting an articulator, the top plate being mounted at the rear edge portion to a support mechanism in a cantilever form  
20       so as to be directed frontwards, the support mechanism being stood in the vicinity of a rear edge portion of the bottom plate;  
      removing the bite material and two side bite materials such that a relative positional relation between the bottom plate and the top plate is retained before and after removing; and
- 25       making the artificial tooth by use of the lower-jaw dentition cast or the upper-jaw dentition cast while the top plate is attached/detached such that a relative positional relation

between the bottom plate and the top plate is retained before and after attached/detached or while the top plate is reversed by rotating to the support mechanism such that a relative positional relation between the bottom plate and the top plate is retained before and after reversed;

the lower-jaw dentition cast and the upper-jaw dentition cast being fixed to the upper surface of the bottom plate and the lower surface of the top plate respectively such that a median line setting rod constituting the occlusal surface transfer

instrument is disposed perpendicularly to the bottom plate;

the median line setting rod being attached to a pupil line setting rod constituting the occlusal surface transfer instrument at right angles in a predetermined angular position around a material axis of the pupil line setting rod;

the pupil line setting rod being connected to other end of the connection member.

15. An occlusal surface transfer instrument comprising: a bite material holding member for holding a non-hardened bite material in a biteable state; a connection member the one end of which the bite material holding member is disposed in; a pupil line setting rod connected near a center region thereof to other end of the connection member; and a median line setting rod attachable to the pupil line setting rod at right angles, the median line setting rod being able to be in an arbitrary angular position around a material axis of the pupil line setting rod;

the pupil line setting rod being able to be attached to the

connection member so as to be at right angles to the material axis of the connection member and so as to be swingable or rotatable around the material axis of the connection member;

the median line setting rod having a predetermined rod body  
5 and a protruding member protruded from a peripheral surface of the rod body along the material axis of the rod body.

16. The occlusal surface transfer instrument according to claim 15 wherein said connection member is provided with an insertion hole having a circular sectional shape in the other  
10 end, and said pupil line setting rod is provided with an inserting portion which protrudes near the center region of said pupil line setting rod and which has circular sectional shape, the inserting portion being fitted into the insertion hole.

17. The occlusal surface transfer instrument according  
15 to claim 16 wherein said connection member is provided with an inserting portion fixing mechanism so that the inserting portion is fixed into the insertion hole at an arbitrary angle to an axial line of the insertion hole.

18. The occlusal surface transfer instrument according  
20 to claim 15 wherein said pupil line setting rod is formed to a circular section and said median line setting rod is provided with a fitting portion in the peripheral surface of said median line setting rod, the fitting portion being attachable to said pupil line setting rod and being constituted so that said median  
25 line setting rod can be slidable along said pupil line setting rod and can be swung or rotated around the material axis of said pupil line setting rod when said median line setting rod is



attached to said pupil line setting rod.

19. The occlusal surface transfer instrument according to claim 18 wherein said fitting portion is provided with a fitting portion fixing mechanism so that said median line setting rod can be fixed at a desired position of said pupil line setting rod and in a desired angular position around a material axis of said pupil line setting rod in a state in which said fitting portion is attached to said pupil line setting rod.

20. An articulator comprising:

10 a bottom plate the upper surface of which a lower-jaw dentition cast is able to be attached to;

a support mechanism stood in the vicinity of a rear edge portion of the bottom plate; and

15 a top plate the lower surface of which an upper-jaw dentition cast is able to be attached to;

the top plate being mounted at rear edge portion thereof to the support mechanism in a cantilever form so as to be directed frontwards and being mounted to the support mechanism detachably or rotatably such that an upper and lower sides of the top plate can be reversed;

20 the bottom plate having a predetermined fitting groove formed in a front end surface of the bottom plate and the top plate having a predetermined fitting groove formed in a front end surface of the top plate such that a protruding member of a median line setting rod constituting an occlusal surface transfer instrument according to any one of claims 15 to 19 is detachably fitted into the fitting grooves;

the bottom plate and the top plate being constituted to be able to hold temporarily the median line setting rod when the protruding member of the median line setting rod is fitted into the fitting grooves such that the median line setting rod is perpendicular to the bottom plate and the median line setting rod is positioned at a specific angle around an axial line perpendicular to the bottom plate;

the bottom plate and the top plate being constituted to be able to fix the lower-jaw dentition cast and the upper-jaw dentition cast to the upper surface of the bottom plate and the lower surface of the top plate respectively when the protruding member of the median line setting rod is fitted into the fitting grooves on the condition that a hardened bite material held by a bite material holding member constituting the occlusal surface transfer instrument is bitten between front teeth of the upper-jaw dentition cast and those of the lower-jaw dentition cast so as to correspond to an occlusion impression impressed on the hardened bite material and that two side materials are bitten between molar of the upper-jaw dentition cast and molar of the lower-jaw dentition cast respectively so as to correspond to occlusion impressions impressed by upper and lower molar on two side bite materials respectively;

the top plate and the support mechanism being constituted to be able to retain a relative positional relation between the bottom plate and the top plate before and after removing the bite material and two side bite materials and to be able to retain a relative positional relation between the bottom plate and the

top plate before and after mounting the top plate or before and after reversing the top plate.

21. The articulator according to claim 20 wherein said support mechanism comprises a pair of height adjusting rods stood  
5 at a distance each other along a rear edge portion of said bottom plate,

wherein said top plate comprises a top plate base member whose opposite end portions are provided with rod holes through which the height adjusting rods are inserted, and a top plate main body  
10 connected to the top plate base member via hinges,

whereby to elevate said top plate along the height adjusting rods and reverse upper and lower surfaces of said top plate main body,

wherein a fixing mechanism which fixes the top plate base member  
15 to desired positions of the height adjusting rods is disposed in the top plate base member or the height adjusting rod.

22. The articulator according to claim 20 wherein a front end surface of said bottom plate or said top plate is provided with a predetermined pupil line reference line disposed  
20 in parallel with said bottom plate.

23. The articulator according to claim 21 wherein a front end surface of said bottom plate or said top plate is provided with a predetermined pupil line reference line disposed in parallel with said bottom plate.

24. An occlusal surface transfer instrument  
25 comprising:

a bite material holding member for holding a non-hardened bite

material in a bitable state; a connection member the one end of which the bite material holding member is disposed in; a pupil line setting rod connected near a center region thereof to other end of the connection member; and a median line setting rod  
5 attachable to the pupil line setting rod at right angles;

said median line setting rod being able to be in an arbitrary angular position around a material axis of the pupil line setting rod;

said pupil line setting rod being able to be attached to the  
10 connection member so as to be at right angles to the material axis of the connection member and so as to be swingable or rotatable around the material axis of the connection member;

said median line setting rod having a non-circular section.

25. The occlusal surface transfer instrument according  
15 to claim 24 wherein said connection member is provided with an insertion hole having a circular sectional shape in the other end, and said pupil line setting rod is provided with an inserting portion which protrudes near the center region of said pupil line setting rod and which has circular sectional shape, the inserting  
20 portion being fitted into the insertion hole.

26. The occlusal surface transfer instrument according  
to claim 25 wherein said connection member is provided with an inserting portion fixing mechanism so that the inserting portion is fixed into the insertion hole at an arbitrary angle to an axial  
25 line of the insertion hole.

27. The occlusal surface transfer instrument according  
to claim 24 wherein said pupil line setting rod is formed to a

circular section and said median line setting rod is provided with a fitting portion in the peripheral surface of said median line setting rod, the fitting portion being attachable to said pupil line setting rod and being constituted so that said median line setting rod can be slidable along said pupil line setting rod and can be swung or rotated around the material axis of said pupil line setting rod when said median line setting rod is attached to said pupil line setting rod.

28. The occlusal surface transfer instrument according to claim 27 wherein said fitting portion is provided with a fitting portion fixing mechanism so that said median line setting rod can be fixed at a desired position of said pupil line setting rod and in a desired angular position around a material axis of said pupil line setting rod in a state in which said fitting portion is attached to said pupil line setting rod.

29. An articulator comprising:

a bottom plate the upper surface of which a lower-jaw dentition cast is able to be attached to;

a support mechanism stood in the vicinity of a rear edge portion of the bottom plate; and

a top plate the lower surface of which an upper-jaw dentition cast is able to be attached to; the top plate being mounted at rear edge portion thereof to the support mechanism in a cantilever form so as to be directed frontwards and being mounted to the support mechanism detachably or rotatably such that an upper and lower sides of the top plate can be reversed;

said bottom plate having a predetermined rod fitting recessed

portion formed in a front end surface of the bottom plate and the top plate having a predetermined rod fitting recessed portion formed in a front end surface of the top plate such that a median line setting rod constituting an occlusal surface transfer instrument according to any one of claims 24 to 28 is detachably fitted into the recessed portions;

5 said bottom plate and said top plate being constituted to be able to hold temporarily the median line setting rod when the median line setting rod is fitted into the rod fitting recessed portions such that the median line setting rod is perpendicular to the bottom plate and the median line setting rod is positioned at a specific angle around an axial line perpendicular to the bottom plate;

10 said bottom plate and said top plate being constituted to be able to fix the lower-jaw dentition cast and the upper-jaw dentition cast to the upper surface of the bottom plate and the lower surface of the top plate respectively when the median line setting rod is fitted into the rod fitting recessed portions on the condition that a hardened bite material held by a bite material holding member constituting the occlusal surface transfer instrument is bitten between front teeth of the upper-jaw dentition cast and those of the lower-jaw dentition cast so as to correspond to an occlusion impression impressed on the hardened bite material and that two side materials are bitten between molar of the upper-jaw dentition cast and molar of the lower-jaw dentition cast respectively so as to correspond to occlusion impressions impressed by upper and lower molar on

two side bite materials respectively;

said top plate and said support mechanism being constituted to be able to retain a relative positional relation between the bottom plate and the top plate before and after removing the bite material and two side bite materials and to be able to retain  
5 a relative positional relation between the bottom plate and the top plate before and after mounting the top plate or before and after reversing the top plate.

30. The articulator according to claim 29 wherein said  
10 support mechanism comprises a pair of height adjusting rods stood at a distance each other along a rear edge portion of said bottom plate,

wherein said top plate comprises a top plate base member whose opposite end portions are provided with rod holes through which  
15 the height adjusting rods are inserted, and a top plate main body connected to the top plate base member via hinges,

whereby to elevate said top plate along the height adjusting rods and reverse upper and lower surfaces of said top plate main body,

20 wherein a fixing mechanism which fixes the top plate base member to desired positions of the height adjusting rods is disposed in the top plate base member or the height adjusting rod.

31. The articulator according to claim 29 wherein a front end surface of said bottom plate or said top plate is  
25 provided with a predetermined pupil line reference line disposed in parallel with said bottom plate.

32. The articulator according to claim 30 wherein a

front end surface of said bottom plate or said top plate is provided with a predetermined pupil line reference line disposed in parallel with said bottom plate.

33. An occlusal surface transfer instrument  
5 comprising:

a bite material holding member for holding a non-hardened bite material in a bitable state; a connection member the one end of which the bite material holding member is disposed in;

a pupil line setting rod connected near a center region thereof  
10 to other end of the connection member; and

a median line setting rod attachable to the pupil line setting rod at right angles;

the median line setting rod being able to be in an arbitrary angular position around a material axis of the pupil line setting  
15 rod;

the pupil line setting rod being able to be attached to the connection member so as to be at right angles to the material axis of the connection member and so as to be swingable or rotatable around the material axis of the connection member;

20 the median line setting rod including a predetermined rod body having a noncircular section and a protruding member protruded from a peripheral surface of the rod body along the material axis of the rod body.

34. The occlusal surface transfer instrument according  
25 to claim 33 wherein said connection member is provided with an insertion hole having a circular sectional shape in the other end, and said pupil line setting rod is provided with an inserting



portion which protrudes near the center region of said pupil line setting rod and which has circular sectional shape, the inserting portion being fitted into the insertion hole.

35. The occlusal surface transfer instrument according  
5 to claim 34 wherein said connection member is provided with an inserting portion fixing mechanism so that the inserting portion is fixed into the insertion hole at an arbitrary angle to an axial line of the insertion hole.

36. The occlusal surface transfer instrument according  
10 to claim 33 wherein said pupil line setting rod is formed to a circular section and said median line setting rod is provided with a fitting portion in the peripheral surface of said median line setting rod, the fitting portion being attachable to said pupil line setting rod and being constituted so that said median  
15 line setting rod can be slidable along said pupil line setting rod and can be swung or rotated around the material axis of said pupil line setting rod when said median line setting rod is attached to said pupil line setting rod.

37. The occlusal surface transfer instrument according  
20 to claim 36 wherein said fitting portion is provided with a fitting portion fixing mechanism so that said median line setting rod can be fixed at a desired position of said pupil line setting rod and in a desired angular position around a material axis of said pupil line setting rod in a state in which said fitting  
25 portion is attached to said pupil line setting rod.

38. An articulator comprising:

a bottom plate the upper surface of which a lower-jaw dentition

cast is able to be attached to;

a support mechanism stood in the vicinity of a rear edge portion of the bottom plate; and

5 a top plate the lower surface of which an upper-jaw dentition cast is able to be attached to; the top plate being mounted at rear edge portion thereof to the support mechanism in a cantilever form so as to be directed frontwards and being mounted to the support mechanism detachably or rotatably such that an upper and lower sides of the top plate can be reversed;

10 the bottom plate having a predetermined rod fitting recessed portion formed in a front end surface of the bottom plate and the top plate having a predetermined rod fitting recessed portion formed in a front end surface of the top plate such that a rod body of a median line setting rod constituting an occlusal surface transfer instrument according to any one of claims 33 to 37 is  
15 detachably attached into the rod fitting recessed portions;

the rod fitting recessed portion being formed in the inner surface of which a predetermined fitting groove is formed such that a protruding member of the median line setting rod is  
20 detachably fitted into the predetermined fitting grooves;

the bottom plate and the top plate being constituted to be able to hold temporarily the median line setting rod when the rod body and the protruding member are fitted into the rod fitting recessed portions and the fitting grooves respectively such that the  
25 median line setting rod is perpendicular to the bottom plate and the median line setting rod is positioned at a specific angle around an axial line perpendicular to the bottom plate;

the bottom plate and the top plate being constituted to be able to fix the lower-jaw dentition cast and the upper-jaw dentition cast to the upper surface of the bottom plate and the lower surface of the top plate respectively when the rod body and the protruding member are fitted into the rod fitting recessed portions and the fitting grooves respectively on the condition that a hardened bite material held by a bite material holding member constituting the occlusal surface transfer instrument is bitten between front teeth of the upper-jaw dentition cast and those of the lower-jaw dentition cast so as to correspond to an occlusion impression impressed on the hardened bite material and that two side materials are bitten between molar of the upper-jaw dentition cast and molar of the lower-jaw dentition cast respectively so as to correspond to occlusion impressions impressed by upper and lower molar on two side bite materials respectively;

the top plate and the support mechanism being constituted to be able to retain a relative positional relation between the bottom plate and the top plate before and after removing the bite material and two side bite materials and to be able to retain a relative positional relation between the bottom plate and the top plate before and after mounting the top plate or before and after reversing the top plate.

39. The articulator according to claim 38 wherein said support mechanism comprises a pair of height adjusting rods stood at a distance each other along a rear edge portion of said bottom plate,

wherein said top plate comprises a top plate base member whose

opposite end portions are provided with rod holes through which the height adjusting rods are inserted, and a top plate main body connected to the top plate base member via hinges,

whereby to elevate said top plate along the height adjusting rods and reverse upper and lower surfaces of said top plate main body,

wherein a fixing mechanism which fixes the top plate base member to desired positions of the height adjusting rods is disposed in the top plate base member or the height adjusting rod.

10           40. The articulator according to claim 38 wherein a front end surface of said bottom plate or said top plate is provided with a predetermined pupil line reference line disposed in parallel with said bottom plate.

15           41. The articulator according to claim 39 wherein a front end surface of said bottom plate or said top plate is provided with a predetermined pupil line reference line disposed in parallel with said bottom plate.

42. An articulator comprising:

20           a bottom plate the upper surface of which a lower-jaw dentition cast is able to be attached to;

          a support mechanism stood in the vicinity of a rear edge portion of the bottom plate;

          a top plate the lower surface of which an upper-jaw dentition cast is able to be attached to; and

25           an occlusal surface setting mechanism elevatably passed through a through hole formed in the vicinity of a front side of the top plate;

the top plate being mounted at rear edge portion thereof to the support mechanism in a cantilever form so as to be directed frontwards and being mounted to the support mechanism detachably or rotatably such that an upper and lower sides of the top plate  
5 can be reversed;

the occlusal surface setting mechanism including:

an elevator rod passed through the through hole so as to be non-rotatable around a material axis thereof;

an incisor guide member disposed at right angles to the material  
10 axis of the elevator rod in the vicinity of a lower end thereof and so as to protrude to a rear side of the bottom plate; and  
a pupil line guide member disposed at right angles to the material axis of the elevator rod and the incisor guide member in the vicinity of the lower end of the elevator rod,

15 the bottom plate and the top plate being constituted to be able to fix the lower-jaw dentition cast and the upper-jaw dentition cast to the upper surface of the bottom plate and the lower surface of the top plate respectively such that a median line setting rod constituting an occlusal surface transfer instrument  
20 according to any one of claims 1 to 5 is disposed perpendicularly to the bottom plate on the condition that a hardened bite material held by a bite material holding member constituting the occlusal surface transfer instrument is bitten between front teeth of the upper-jaw dentition cast and those of the lower-jaw dentition  
25 cast so as to correspond to an occlusion impression impressed on the hardened bite material and that two side materials are bitten between molar of the upper-jaw dentition cast and molar

of the lower-jaw dentition cast respectively so as to correspond to occlusion impressions impressed by upper and lower molar on two side bite materials respectively;

the top plate and the support mechanism being constituted to  
5 be able to retain a relative positional relation between the bottom plate and the top plate before and after removing the bite material and two side bite materials and to be able to retain a relative positional relation between the bottom plate and the top plate before and after mounting the top plate or before and  
10 after reversing the top plate.

43. The articulator according to claim 42 wherein median line setting rod grooves into which the median line setting rod constituting the occlusal surface transfer instrument are to be fitted are formed in the front end surfaces of the bottom  
15 and top plates, and the median line setting rod groove is set so that the median line setting rod becomes perpendicular to the bottom plate and that a material axis of the median line setting rod and that of the incisor guide member are included in the same plane, when the median line setting rod is fitted into the median  
20 line setting rod grooves.

44. The articulator according to claim 42 wherein said support mechanism comprises a pair of height adjusting rods stood at a distance each other along a rear edge portion of said bottom plate,  
25 wherein said top plate comprises a top plate base member whose opposite end portions are provided with rod holes through which the height adjusting rods are inserted, and a top plate main body

connected to the top plate base member via hinges,  
whereby to elevate said top plate along the height adjusting  
rods and reverse upper and lower surfaces of said top plate main  
body,

5 wherein a fixing mechanism which fixes the top plate base member  
to desired positions of the height adjusting rods is disposed  
in the top plate base member or the height adjusting rod.

45. The articulator according to claim 43 wherein said  
support mechanism comprises a pair of height adjusting rods stood  
10 at a distance each other along a rear edge portion of said bottom  
plate,

wherein said top plate comprises a top plate base member whose  
opposite end portions are provided with rod holes through which  
the height adjusting rods are inserted, and a top plate main body  
15 connected to the top plate base member via hinges,

whereby to elevate said top plate along the height adjusting  
rods and reverse upper and lower surfaces of said top plate main  
body,

wherein a fixing mechanism which fixes the top plate base member  
20 to desired positions of the height adjusting rods is disposed  
in the top plate base member or the height adjusting rod.

46. An occlusal surface setting instrument comprising:  
a predetermined median line guide member;  
an elevator member attached so as to be elevatable along the  
25 median line guide member;

an incisor guide member protruded from the elevator member at  
right angles to the median line guide member; and

a pupil line guide member attached near a center region thereof to the incisor guide member at right angles to a material axis of the incisor guide member and that of the median line guide member;

5 the median line guide member including:

a median line guiding rod body; and

a median line guiding protruding member protruded from a peripheral surface of the median line guiding rod body along a material axis of the median line guiding rod body, the median  
10 line guiding protruding member having the same section shape as a protruding member of a median line setting rod constituting an occlusal surface transfer instrument according to any one of claims 15 to 19;

the pupil line guide member is positioned to the median line  
15 guide member so that a disposing angle of the pupil line guide member to a protruding direction of the median line guiding protruding member is equal to that of the pupil line setting rod constituting the occlusal surface transfer instrument to the protruding direction of the protruding member.

20 47. An occlusal surface setting instrument comprising:

a predetermined median line guide member;

an incisor guide member protruded from the median line guide member at right angles to a material axis of the median line guide member; and

25 a pupil line guide member attached near a center region thereof to the incisor guide member at right angles to a material axis of the incisor guide member and that of the median line guide



member;

the median line guide member including:

a median line guiding rod body; and

a median line guiding protruding member protruded from a  
5 peripheral surface of the median line guiding rod body along a  
material axis of the median line guiding rod body, the median  
line guiding protruding member having the same section shape as  
a protruding member of a median line setting rod constituting  
an occlusal surface transfer instrument according to any one of  
10 claims 15 to 19;

the pupil line guide member is positioned to the median line  
guide member so that a disposing angle of the pupil line guide  
member to a protruding direction of the median line guiding  
protruding member is equal to that of the pupil line setting rod  
15 constituting the occlusal surface transfer instrument to the  
protruding direction of the protruding member.

48. An occlusal surface setting instrument comprising:

a predetermined median line guide member;  
an elevator member attached so as to be elevatable along the  
20 median line guide member;

an incisor guide member protruded from the elevator member at  
right angles to the median line guide member; and

a pupil line guide member attached near a center region thereof  
to the incisor guide member at right angles to a material axis  
25 of the incisor guide member and that of the median line guide  
member;

the median line guide member having the same section shape as

a median line setting rod constituting an occlusal surface transfer instrument according to any one of claims 24 to 28; the pupil line guide member is positioned to the median line guide member so that a disposing angle of the pupil line guide member to the median line guide member is equal to that of the pupil line setting rod constituting the occlusal surface transfer instrument to the median line setting rod.

49. An occlusal surface setting instrument comprising:  
a predetermined median line guide member;  
10 an incisor guide member protruded from the median line guide member at right angles to a material axis of the median line guide member; and  
a pupil line guide member attached near a center region thereof to the incisor guide member at right angles to a material axis  
15 of the incisor guide member and that of the median line guide member;  
the median line guide member having the same section shape as a median line setting rod constituting an occlusal surface transfer instrument according to any one of claims 24 to 28;  
20 the pupil line guide member is positioned to the median line guide member so that a disposing angle of the pupil line guide member to median line guide member is equal to that of the pupil line setting rod constituting the occlusal surface transfer instrument to the a median line setting rod.

25 50. An occlusal surface setting instrument comprising:  
a predetermined median line guide member;  
an elevator member attached so as to be elevatable along the

median line guide member;

an incisor guide member protruded from the elevator member at right angles to the median line guide member; and

a pupil line guide member attached near a center region thereof  
5 to the incisor guide member at right angles to a material axis of the incisor guide member and that of the median line guide member;

the median line guide member including:

a median line guiding rod body; and

10 a median line guiding protruding member protruded from a peripheral surface of the median line guiding rod body along a material axis of the median line guiding rod body, the median line guide member having the same section shape as a median line setting rod constituting an occlusal surface transfer instrument  
15 according to any one of claims 33 to 37;

the pupil line guide member is positioned to the median line guide member so that a disposing angle of the pupil line guide member to a protruding direction of the median line guiding protruding member is equal to that of the pupil line setting rod  
20 constituting the occlusal surface transfer instrument to a protruding direction of a protruding member of the median line setting rod.

51. An occlusal surface setting instrument comprising:

a predetermined median line guide member;

25 an incisor guide member protruded from the median line guide member at right angles to a material axis of the median line guide member; and

a pupil line guide member attached near a center region thereof to the incisor guide member at right angles to a material axis of the incisor guide member and that of the median line guide member;

5 the median line guide member including:

a median line guiding rod body; and

a median line guiding protruding member protruded from a peripheral surface of the median line guiding rod body along a material axis of the median line guiding rod body, the median  
10 line guide member having the same section shape as a median line setting rod constituting an occlusal surface transfer instrument according to any one of claims 33 to 37;

the pupil line guide member is positioned to the median line guide member so that a disposing angle of the pupil line guide  
15 member to a protruding direction of the median line guiding protruding member is equal to that of a pupil line setting rod constituting an occlusal surface transfer instrument to a protruding direction of a protruding member of the median line setting rod.

20 52. An articulator comprising:

a bottom plate the upper surface of which a lower-jaw dentition cast is able to be attached to;

a support mechanism stood in the vicinity of a rear edge portion of the bottom plate;

25 a top plate the lower surface of which an upper-jaw dentition cast is able to be attached to; and

an occlusal surface setting mechanism elevatably passed through

a through hole formed in the vicinity of a front side of the top plate;

the top plate being mounted at rear edge portion thereof to the support mechanism in a cantilever form so as to be directed frontwards and being mounted to the support mechanism detachably  
5 or rotatably such that an upper and lower sides of the top plate can be reversed;

the occlusal surface setting mechanism including:

an elevator rod passed through the through hole so as to be  
10 non-rotatable around a material axis thereof;

an incisor guide member disposed at right angles to the material axis of the elevator rod in the vicinity of a lower end thereof and so as to protrude to a rear side of the bottom plate; and

a pupil line guide member disposed at right angles to the  
15 material axis of the elevator rod and the incisor guide member in the vicinity of the lower end of the elevator rod;

the bottom plate having a predetermined fitting groove formed in a front end surface of the bottom plate and the top plate having a predetermined fitting groove formed in a front end surface of  
20 the top plate such that a protruding member of a median line setting rod constituting an occlusal surface transfer instrument according to any one of claims 15 to 19 is detachably fitted into the fitting grooves;

the bottom plate and the top plate being constituted to be able  
25 to hold temporarily the median line setting rod when the protruding member of the median line setting rod is fitted into the fitting grooves such that a pupil line setting rod

constituting the occlusal surface transfer instrument becomes parallel to the pupil line guide member, that the median line setting rod becomes perpendicular to the bottom plate and that the material axis of the median line setting rod and the material  
5 axis of the incisor guide member are on a same plane;

the bottom plate and the top plate being constituted to be able to fix the lower-jaw dentition cast and the upper-jaw dentition cast to the upper surface of the bottom plate and the lower surface of the top plate respectively when the protruding member of the  
10 median line setting rod is fitted into the fitting grooves on the condition that a hardened bite material held by a bite material holding member constituting the occlusal surface transfer instrument is bitten between front teeth of the upper-jaw dentition cast and those of the lower-jaw dentition  
15 cast so as to correspond to an occlusion impression impressed on the hardened bite material and that two side materials are bitten between molar of the upper-jaw dentition cast and molar of the lower-jaw dentition cast respectively so as to correspond to occlusion impressions impressed by upper and lower molar on  
20 two side bite materials respectively;

the top plate and the support mechanism being constituted to be able to retain a relative positional relation between the bottom plate and the top plate before and after removing the bite material and two side bite materials and to be able to retain  
25 a relative positional relation between the bottom plate and the top plate before and after mounting the top plate or before and after reversing the top plate.

53. The articulator according to claim 52 wherein said support mechanism comprises a pair of height adjusting rods stood at a distance each other along a rear edge portion of said bottom plate,

5 wherein said top plate comprises a top plate base member whose opposite end portions are provided with rod holes through which the height adjusting rods are inserted, and a top plate main body connected to the top plate base member via hinges,

whereby to elevate said top plate along the height adjusting  
10 rods and reverse upper and lower surfaces of said top plate main body,

wherein a fixing mechanism which fixes the top plate base member to desired positions of the height adjusting rods is disposed in the top plate base member or the height adjusting rod.

15 54. An articulator comprising:

a bottom plate the upper surface of which a lower-jaw dentition cast is able to be attached to;

a support mechanism stood in the vicinity of a rear edge portion of the bottom plate;

20 a top plate the lower surface of which an upper-jaw dentition cast is able to be attached to; and

an occlusal surface setting mechanism elevatably passed through a through hole formed in the vicinity of a front side of the top plate;

25 the top plate being mounted at rear edge portion thereof to the support mechanism in a cantilever form so as to be directed frontwards and being mounted to the support mechanism detachably

or rotatably such that an upper and lower sides of the top plate can be reversed;

the occlusal surface setting mechanism including:

an elevator rod passed through the through hole so as to be  
5 non-rotatable around a material axis thereof;

an incisor guide member disposed at right angles to the material axis of the elevator rod in the vicinity of a lower end thereof and so as to protrude to a rear side of the bottom plate; and

a pupil line guide member disposed at right angles to the  
10 material axis of the elevator rod and the incisor guide member in the vicinity of the lower end of the elevator rod;

the bottom plate having a rod fitting recessed portion formed in a front end surface of the bottom plate and the top plate having a predetermined rod fitting recessed portion formed in a front  
15 end surface of the top plate such that a median line setting rod constituting an occlusal surface transfer instrument according to any one of claims 24 to 28 is detachably fitted into the rod fitting recessed portions;

the bottom plate and the top plate being constituted to be able  
20 to hold temporarily the median line setting rod when the median line setting rod is fitted into the rod fitting recessed portions such that a pupil line setting rod constituting the occlusal surface transfer instrument becomes parallel to the pupil line guide member, that the median line setting rod becomes  
25 perpendicular to the bottom plate and that the material axis of the median line setting rod and the material axis of the incisor guide member are on a same plane;



the bottom plate and the top plate being constituted to be able to fix the lower-jaw dentition cast and the upper-jaw dentition cast to the upper surface of the bottom plate and the lower surface of the top plate respectively when the median line setting rod is fitted into the rod fitting recessed portions on the condition that a hardened bite material held by a bite material holding member constituting the occlusal surface transfer instrument is bitten between front teeth of the upper-jaw dentition cast and those of the lower-jaw dentition cast so as to correspond to an occlusion impression impressed on the hardened bite material and that two side materials are bitten between molar of the upper-jaw dentition cast and molar of the lower-jaw dentition cast respectively so as to correspond to occlusion impressions impressed by upper and lower molar on two side bite materials respectively;

the top plate and the support mechanism being constituted to be able to retain a relative positional relation between the bottom plate and the top plate before and after removing the bite material and two side bite materials and to be able to retain a relative positional relation between the bottom plate and the top plate before and after mounting the top plate or before and after reversing the top plate.

55. The articulator according to claim 54 wherein said support mechanism comprises a pair of height adjusting rods stood at a distance each other along a rear edge portion of said bottom plate,

wherein said top plate comprises a top plate base member whose

opposite end portions are provided with rod holes through which the height adjusting rods are inserted, and a top plate main body connected to the top plate base member via hinges,

whereby to elevate said top plate along the height adjusting rods and reverse upper and lower surfaces of said top plate main body,

wherein a fixing mechanism which fixes the top plate base member to desired positions of the height adjusting rods is disposed in the top plate base member or the height adjusting rod.

10           56. An articulator comprising:

a bottom plate the upper surface of which a lower-jaw dentition cast is able to be attached to;

a support mechanism stood in the vicinity of a rear edge portion of the bottom plate;

15           a top plate the lower surface of which an upper-jaw dentition cast is able to be attached to; and

an occlusal surface setting mechanism elevatably passed through a through hole formed in the vicinity of a front side of the top plate;

20           the top plate being mounted at rear edge portion thereof to the support mechanism in a cantilever form so as to be directed frontwards and being mounted to the support mechanism detachably or rotatably such that an upper and lower sides of the top plate can be reversed;

25           the occlusal surface setting mechanism including:

an elevator rod passed through the through hole so as to be non-rotatable around a material axis thereof;

an incisor guide member disposed at right angles to the material axis of the elevator rod in the vicinity of a lower end thereof and so as to protrude to a rear side of the bottom plate; and a pupil line guide member disposed at right angles to the material axis of the elevator rod and the incisor guide member in the vicinity of the lower end of the elevator rod;

the bottom plate having a rod fitting recessed portion formed in a front end surface of the bottom plate and the top plate having a predetermined rod fitting recessed portion formed in a front end surface of the top plate such that a rod body of a median line setting rod constituting an occlusal surface transfer instrument according to any one of claims 33 to 37 is detachably fitted into the rod fitting recessed portions;

the bottom plate having a fitting groove formed in an inner surface of the rod fitting recessed portion formed in the bottom plate and the top plate having a fitting groove formed in an inner surface of the rod fitting recessed portion formed in the top plate such that a protruding member of the median line setting rod is detachably fitted into the rod fitting grooves;

the bottom plate and the top plate being constituted to be able to hold temporarily the median line setting rod when the rod body and the protruding member of the median line setting rod is fitted into the rod fitting recessed portions and the fitting grooves respectively such that a pupil line setting rod constituting the occlusal surface transfer instrument becomes parallel to the pupil line guide member, that the median line setting rod becomes perpendicular to the bottom plate and that the material axis of

the median line setting rod and the material axis of the incisor guide member are on a same plane;

the bottom plate and the top plate being constituted to be able to fix the lower-jaw dentition cast and the upper-jaw dentition cast to the upper surface of the bottom plate and the lower surface of the top plate respectively when the rod body and the protruding member of the median line setting rod is fitted into the rod fitting recessed portions and the fitting grooves respectively on the condition that a hardened bite material held by a bite material holding member constituting the occlusal surface transfer instrument is bitten between front teeth of the upper-jaw dentition cast and those of the lower-jaw dentition cast so as to correspond to an occlusion impression impressed on the hardened bite material and that two side materials are bitten between molar of the upper-jaw dentition cast and molar of the lower-jaw dentition cast respectively so as to correspond to occlusion impressions impressed by upper and lower molar on two side bite materials respectively;

the top plate and the support mechanism being constituted to be able to retain a relative positional relation between the bottom plate and the top plate before and after removing the bite material and two side bite materials and to be able to retain a relative positional relation between the bottom plate and the top plate before and after mounting the top plate or before and after reversing the top plate.

57. The articulator according to claim 56 wherein said support mechanism comprises a pair of height adjusting rods stood

at a distance each other along a rear edge portion of said bottom plate,

wherein said top plate comprises a top plate base member whose opposite end portions are provided with rod holes through which the height adjusting rods are inserted, and a top plate main body connected to the top plate base member via hinges,

whereby to elevate said top plate along the height adjusting rods and reverse upper and lower surfaces of said top plate main body,

wherein a fixing mechanism which fixes the top plate base member to desired positions of the height adjusting rods is disposed in the top plate base member or the height adjusting rod.

58. The articulator according to claim 42 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

59. The articulator according to claim 43 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

60. The articulator according to claim 44 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

61. The articulator according to claim 45 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

62. The articulator according to claim 45 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

63. The articulator according to claim 46 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

5 64. The articulator according to claim 48 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

65. The articulator according to claim 49 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

10 66. The articulator according to claim 50 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

15 67. The articulator according to claim 51 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

68. The articulator according to claim 52 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

20 69. The articulator according to claim 53 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

70. The articulator according to claim 54 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

25 71. The articulator according to claim 55 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

72. The articulator according to claim 56 wherein said incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

73. The articulator according to claim 57 wherein said  
5 incisor guide member is constituted to be stretchable, and a tip of the incisor guide member is formed to be sharp-pointed.

#### ABSTRACT

There are provided an occlusal surface transfer  
10 instrument, an articulator, and an occlusal surface setting instrument capable of making an artificial tooth with a dentition adapted to patient's occlusal surface, and a method of making an artificial tooth by use of them.

An occlusal surface transfer instrument 10 according to  
15 the present invention is constituted of: a bite material holding member 2 which holds a non-hardened bite material 1 in a biteable state; a connection member 3 whose one end is provided with the bite material holding member; a pupil line setting rod 4 disposed in the other end of the connection member, and a median line  
20 setting rod 5 which is attachable at right angles to the pupil line setting rod and in an arbitrary angular position around a material axis of the pupil line setting rod. An insertion hole 6 having a circular section is formed in the other end of the connection member 3, and an inserting portion 7 to be fitted into  
25 the insertion hole and having a circular section is protruded from the vicinity of the center of the pupil line setting rod 4, and the inserting portion 7 is inserted into the insertion

hole 6 to thereby constitute the pupil line setting rod 4 at right angles with respect to a material axis of the connection member 3 and so as to be swingable or rotatable around the material axis.

5      FIG. 8

101    BIT A HARDENED BITE MATERIAL 1' HELD BY A BITE MATERIAL  
HOLDING MEMBER 2 OF THE OCCLUSAL SURFACE TRANSFER INSTRUMENT 10  
IN WHICH THE PATIENT'S PUPIL LINE AND THE MEDIAN LINE ARE RECORDED  
10    BETWEEN FRONT TEETH 73 OF AN UPPER-JAW DENTITION CAST 71 AND FRONT  
TEETH 74 OF A LOWER-JAW DENTITION CAST 72

102    BEFORE, AFTER, OR SIMULTANEOUSLY WITH SUCH OPERATION, BIT  
TWO SIDE BITE MATERIALS 25', 27' ON WHICH OCCLUSION MOLDS OF UPPER  
15    AND LOWER MOLAR TEETH 75, 76, 77, 78 ON OPPOSITE SIDES HAVE BEEN  
IMPRESSED BY THE OPPOSITE SIDES OF THE UPPER-JAW DENTITION CAST  
71 AND THE LOWER-JAW DENTITION CAST 72 SO AS TO CORRESPOND TO  
THE OCCLUSION MOLDS

20    103    IN SUCH STATE, FIT THE MEDIAN LINE SETTING ROD 5  
CONSTITUTING THE OCCLUSAL SURFACE TRANSFER INSTRUMENT 10 INTO  
THE MEDIAN LINE SETTING ROD GROOVES 58A, 58B FORMED IN FRONT END  
SURFACES OF THE BOTTOM PLATE 51 AND THE TOP PLATE MAIN BODY 52,  
RESPECTIVELY, SO AS TO BE PERPENDICULAR TO THE BOTTOM PLATE 51  
25    SO THAT THE LOWER-JAW DENTITION CAST IS FIXED TO AN UPPER SURFACE  
OF THE BOTTOM PLATE 51 AND THE UPPER-JAW DENTITION CAST IS FIXED  
TO A LOWER SURFACE OF THE TOP PLATE 54, RESPECTIVELY



104 IN THIS POSITION, FIT THIRD MALE SCREWS 57, 57 INTO THE  
PAIR OF THIRD FEMALE SCREW HOLES 92, 92 FORMED IN THE TOP PLATE  
BASE MEMBER 53 AND TIGHTEN THE TOP PLATE BASE MEMBER 53 TO HEIGHT  
5 ADJUSTING RODS 56, 56, RESPECTIVELY

105 REMOVE THE BITE MATERIAL 1' AND TWO SIDE BITE MATERIALS  
25', 27' BITTEN BY THE UPPER-JAW DENTITION CAST 71 AND THE  
LOWER-JAW DENTITION CAST 72, RESPECTIVELY

10

106 REVERSE THE TOP PLATE MAIN BODY 52 WITH RESPECT TO THE TOP  
PLATE BASE MEMBER 53 UNTIL THE UPPER SURFACE OF THE TOP PLATE  
MAIN BODY 52 ABUTS ON THAT OF THE TOP PLATE BASE MEMBER 53

15 107 IN SUCH STATE, MAKE THE INCISORS AND THE OTHER ARTIFICIAL  
TEETH FOR THE UPPER-JAW DENTITION SO THAT AN OCCLUSAL SURFACE  
BECOMES PARALLEL TO THE PUPIL LINE REFERENCE LINES 59A, 59B AND  
A PORTION BETWEEN INCISORS 79A, 79B JUST AGREES WITH MEDIAN LINE  
REFERENCE LINES 60A, 60B

20

FIGS. 13, 44

PROTRUDING DIRECTION

DESCRIPTION

25